CLAIMS

1. Genetically modified *Escherichia coli* JM109, capable of producing poly-beta-hydroxybutyrate in recoverable quantities of about 60% of the dry cell mass and bearing deposit number ATCC PTA 1579.

2. Genetically modified *Escherichia coli* as claimed in claim 1 transformed by a multicopy plasmid vector containing a DNA sequence coding for poly-beta-hydroxybutyrate biosynthetic pathway.

3. Genetically modified *Escherichia coli* as claimed in claim 1 wherein the plasmid vector containing the DNA sequence is pSa240.

4. Genetically modified *Escherichia coli* as claimed in claim 1 wherein the sequence coding for poly-beta-hydroxybutyrate is a 4.826 kb fragment.

5. A multicopy plasmid vector pSa240 harboring the DNA sequence coding for poly-beta-hydroxybutyrate synthesis.

6. A method for producing poly-beta-hydroxybutyrate (PHB), said method comprising the steps of:

   (i) isolating the DNA sequence coding for the poly-beta-hydroxybutyrate (PHB) biosynthetic pathway, from *Streptomyces aureofaciens* NRRL2209,

   (ii) cloning the DNA sequence coding for PHB pathway into a plasmid vector pGEM-3Z to obtain a multicopy vector designated as pSa240,

   (iii) transforming *Escherichia coli* JM109 with the plasmid vectyor pSa240 to obtain recombinant *Escherichia coli* JM109 bearing accession No.PTA1579 and harbouring the gene responsible for production of PHB, and

(iv) culturing recombinant *Escherichia coli* JM109 in a conventional medium containing glycerol and recovering poly-beta-hydroxybutyrate.

7. A method as claimed in claim 6 wherein, the nucleic acid fragment coding for poly-beta-hydroxybutyrate synthesis pathway is a 4.826 Kb long fragment.

8. A method as claimed in claim 6 wherein, the nucleic acid fragment coding for PHB pathway is isolated from *Streptomyces aurefaciens* NRRL2209.

9. A method as claimed in claim 6 wherein, the DNA sequence coding for PHB pathway is cloned into the multicopy plasmid vector named pGEM-3Z.

10. A method as claimed in claim 6 wherein, the plasmid vector harbouring the gene coding for PHB pathway is pSa240.

11. A method as claimed in claim 6 wherein, *Escherichia coli* JM109 is transformed with the multicopy plasmid vector pSa240 at a temperature in the range of 14°-18°C in the presence of T4 DNA ligase enzyme.

12. A method as claimed in claim 6 wherein, the recombinant *Escherichia coli* JM109 is deposited with ATCC and bears accession No.PTA1579.

13. A method as claimed in claim 6 wherein, the transformed recombinant *Escherichia coli* JM109 when cultured in medium containing glycerol expresses the said biosynthetic pathway gene by producing poly-beta-hydroxybutyrate in recoverable quantities of at least about 60% of the dry cell mass of the *Escherichia coli* JM109 bacterial host.